

EXCURSIONS TO LAKE BAICAL

By W. J. EYERDAM

During the Russo-Japanese war, when I was a small boy, I had been much interested in reading about the Russians running the tracks of the Trans-Siberian railway across Lake Baical on the ice, to bring war supplies to the Far East. I was also intrigued in later years to read about the marvelous endemic biota of this deepest freshwater lake in the world which is over 500 miles long and nearly 6000 feet deep. Some of the oddities of the lake are the freshwater seals, freshwater codfish, huge Neptune's chalice sponges, *Veluspa baicalensis*, and the host of strange crustaceans, many of which are unlike any others in the world. Nearly all the over one hundred species of shells in the lake are endemic, including several endemic genera. Like the peculiar marine-like shells of Lake Tanganyika, the Baical shells are all distinctly freshwater species, but thin and fragile. The water is very clear, pure and cold, with very little mineral in solution.

About 100 species of fish live in the lake, of which about 90 per cent are endemic. The crustacean family Gammaridae, including hundreds of species, is notable for their bright colors, large size or bizarre shape of some forms.

The greatest mystery of all is the presence of seals in a freshwater lake thousands of miles from the nearest ocean. At one time there was an important seal hunting industry on the lake, but the rookeries have been heavily depleted. I have seen and compared specimens of the seals, *Phoca baicalensis*, with *Phoca caspica* in the Academy of Sciences at Leningrad and could note but very little difference.

Geologists have been at a loss as to which ocean Lake Baical has been connected with. Most of them believe that it must have been with the Sea of Japan, which if really the case would probably have been in Jurassic times and before the great masses of parallel mountain chains of the high Yablonoi and Stanovoi ranges could have thrown up their great barrier ramparts to the east. So far there has been insufficient evidence to support this theory.

My own opinion is that in Tertiary times there was perhaps

a great Mediterranean sea that connected the Atlantic with the Indian Ocean that extended as far as Lake Baical, leaving a chain of dry lake beds and brackish or saline lakes in its wake as the sea became landlocked. During the course of long lapses of time these bodies of inland waters fluctuated greatly in degree of salinity according to the supply of rainfall and drainage. Eventually nearly all of the lakes became brackish or salty again after the recession of the glaciers after the Pleistocene age when the vast area of Central Asia assumed a decidedly arid aspect. Since that time the drying up process of remaining lakes and the inland seas of Balkash, Aral and Caspian have proceeded at an ever more and more accelerated rate, but Baical has remained pure and fresh because of the melting snows of the mountains of the Bargozinian range and the rapid outflow of the Angara River into the Middle Tunguska, a tributary of the mighty Yenisei River.

I have never noted an opinion expressing this theory, but the presence of the almost identical species of seal in Baical and Caspian besides a similarity of many other forms of life should be pretty strong evidence to support this view. More conclusive evidence must await the discovery of the fossil remains of seals in the strata of some of the dry lake beds.

Dr. Benedict Dybowski was sent to Lake Baical and later to Kamchatka as a political exile about the time of our civil war. Although he practiced medicine, he was also a great naturalist and had ample opportunity to make extensive biological collections for the Academy of Sciences at St. Petersburg. Most of the endemic shells of Lake Baical were first collected and described by Dybowski. He died at Dorpat, Esthonia, at the age of 97 about 8 years ago. The genus *Benedictia*, a peculiar Baical shell is named in his honor.

The first time I stopped at Irkutsk to collect biological material in Lake Baical in 1928 I had just come from Manchuria via Alaska and Kamchatka with my friend Wm. F. Coultas. We had spent the summer in roaming the wilderness of central Kamchatka, climbing volcanos and collecting plants and birds. Later, we went to Manchuria which at that time was terribly infested by hordes of Hunhutz bandits. We spent a month in that coun-

try, mostly trying to get back into U.S.S.R. At that time it was an extremely difficult matter to get permission to travel in out-of-the-way places in Siberia or to stop at towns along the railroad. In six months of travel in Siberia we had not seen more than a half dozen foreign white men and those few had already become Russian subjects. I had an American passport which didn't help much because we didn't recognize the Soviets. In fact the only European consulate in Asiatic Russia at that time was the German consulate at Vladivostok, which represented all the white nations of the world. In spite of this formidable position the consul had almost no business except when an occasional non-Japanese ship sailed into the harbor of the Golden Horn. This was of course two years before the first Five Year Plan went into effect, when Stalin put the heat on the whole country and transformed it from a lethargic and completely wornout, threadbare condition, to a land of arsenals, munition factories, booming cities and colossal mass production to supply the mighty Red armies to insure the Communist state.

We were entirely on our own with no connections with any institution and the only money that we had was the little we had earned by helping to deliver the American cannery tender "Apex" to Kamchatka, plus one hundred dollars that I had brought from the states. My partner had only the money that he earned on the ship. My records of former work and activities in Kamchatka were preserved in the archives at Moscow and proved to be satisfactory. When we arrived in that far-off land I recognized many of my Russian friends when I was there in 1925. They gave us a great welcome, and upon my request to the president to be allowed to stop for the summer to collect biological material he immediately sent a telegram to Moscow, which is about seven thousand miles distant, to allow my partner and me to stay in Kamchatka. A few days later I received the permission from Moscow. I had been so sure of coöperation from the Kamchatka authorities that I had already made plans to go. The opportunity came when my good friend captain Albert Grove, with whom I had sailed over in 1925 on the auxiliary schooner "Apollo" came out to my home one evening, just after arriving from Chile. A few days later he told me that three

different jobs as captain had been offered him including the delivery of a ship to Kamchatka for the Soviet government. I then learned that it was to be the "Apex," upon which I had made a trip to Alaska on her maiden voyage many years before. I spent about half of one night trying to get Captain Grove to decide on accepting the Russian job, which he finally did. It proved to be the most memorable of his career, for he also landed in the hospital in Moscow, as I did, after many months of travel in Siberia, but I did not see him again after he left Kamchatka with the rest of the crew until I stopped at his home for a visit at Wheaton, Illinois, in 1931.

Before leaving Seattle I had put on board the "Apex" a large supply of biological collecting materials in anticipation of being allowed by the Soviet authorities to stay during the Summer to collect.

I collected over 500 species of plants in the region about Avateha Bay and the volcanoes Avatchinskaja and Korjatskaja and the hot springs of Nulechivo. These are all included in Hulten, "Flora of Kamchatka." Intensive search for Mollusca was made at all likely looking spots.

Late in September we were allowed free passage on the overcrowded "Indigirka" to Vladivostok via Hakodate, Japan. The "Indigirka" struck a rock in 1940 and went down with about seven hundred people somewhere along the Kurile islands.

After spending a month of travel in bandit-ridden Manchuria we finally got back into U.S.S.R. In one place we just missed Roy Chapman Andrews by one hour when he was returning from one of his Gobi Desert excursions. We did, however, meet Baron von Huenefeldt at Manchuli at 2 A.M. while waiting for the train. He had just arrived from Japan and was on his way home from his "first across the Atlantic from Europe" non-stop flight. Coming across Siberia in the winter caused his death of a cold. He died in Sweden a few weeks later.

The Soviet authorities had kindly granted permission to carry a camera, but warned us many times never to use it along the railroad or around military zones. We had been warned that such offense would be severely dealt with. In spite of this warning and in spite of the martial law that Siberia was under, my

partner could not resist the temptation of taking a snapshot from the train of the ruined town of Baical as we passed it. Counter-revolutionists had destroyed the town a few weeks before and there must have been quite a scrap, judging from the debris and the many hedges of barbed wire entanglements that extended down to the lake. The town was completely ruined and deserted. I protested to my partner, but he said there was no danger because nobody could see him.

As soon as we reached Irkutsk our passports and camera were seized by the OGPU and we were put under arrest but allowed to do as we pleased before the trial. We made the best of our time by visiting the professors at the university museum and at the biological station on Lake Baical, where they operate a deep-sea dredging boat with all kinds of equipment to collect the biota in the various habitats.

Four days later the chief of the Siberian OGPU had come fifteen hundred miles from Novosibirsk, the capital of Siberia, to preside over our trial because we were supposed to be important spies. We were taken into an inner chamber of a large wooden building and brought before the dreaded chief of the Soviet Cheka, a man of fierce and grim aspect. We were the first to be tried that morning, while outside of the door was a group of heavily guarded Mongols from the desert of Gobi that would be the next to be tried. Both Coultas and I expressed our admiration for the stoic and defiant attitude of these wild sons of the desert who would probably be sentenced to death or exile at hard labor.

As none of the Russians could speak English and my partner knew no other language, the judge held the trial in German, so I had to answer all the questions of the cross-examination and make all the explanations while my partner sat there without comprehending what was said during the whole time and never quite realizing the seriousness of his offense. The judge was as wily as a fox and tried his best to trap me in some question, but as we had nothing to conceal and had clear consciences I made light of the whole thing and treated it as a joke until the old judge finally decided that we were just a couple of blundering American naturalists and didn't know any better.

After about an hour of rigid cross-questioning the stern old

chief of the OGPU threw off his mask of grim expression and became very friendly. He asked me to give an account of our travels in Kamchatka and listened with intense interest about this remote land of over one hundred volcanoes with its great salmon fisheries, strange natives, numerous hot springs and vast areas of impenetrable alder and dwarf pine thickets which are accessible only by following the well-worn trails made by the huge brown bear which is more abundant here than anywhere else in the world. After asking a lot of questions about Kamchatka, which to the average Russian seems like the end of the world and a land of fascinating interest and mystery, he finally shook hands and said he felt honored to have met a couple of American scientists and would be pleased to be of service to us. He ordered our camera to be returned after destroying the films and as a parting gesture of good will he wished us well on our long journey and said "If at any time you find yourselves in difficulty please write to me, and if you should find yourselves hard pressed for money while in U.S.S.R. send me a telegram.

Some months later, when I was sick to the point of death in the hospital built by Napoleon near the Kremlin, I was given the best treatment that could be had by Dr. Maxim Zedkin, the son of Clara Zedkin, who at that time was second in command after Stalin. Dr. Maxim Zedkin was not only an outstanding M.D. but was also a zoologist. He had taught paleontology at the university of Munich and had written a book on the birds of the Caucasus, where he had carried on explorations. When I recovered from my sickness I was invited three times to the Kremlin as private guest of Clara Zedkin who at that time was past eighty.

Two years later, in November, 1930, upon my return from the Solomon Islands to Seattle, I went home the long way around and came over U.S.S.R. again, which was the fifth time in Siberia in six years. On the train between Chita and Lake Baical I had the pleasant surprise of meeting Mr. and Mrs. Jorgensen, whom I had met in Copenhagen at the house of Hans Schlesch, the well-known European conchologist, just as he was bringing a collection of land shells that he had gathered near the border of Dzungaria a year or two before. Mr. Jorgensen was the director of the Far East Danish Telegraph Company, which was one of the

few foreign companies that was allowed to operate in Asiatic Russian after the reign of the czar.

On this second visit to Irkutsk and Lake Baical I arrived at 3 A.M. and crossed the Angara pontoon bridge in a snowstorm without an overcoat and wearing oxford shoes that I had purchased in Papua. Indeed, during the thirty winter days that I spent in Siberia and ten in Russia on this trip, I wore the same clothes that I wore in Java and Singapore with the addition of an extra undershirt. However, in spite of the cold, I enjoyed tramping in the dry powdery snow and walking across some of the rivers on the ice. All of the rivers except the Angara were frozen over many weeks before. I had intended to buy some clothes in Vladivostok, but now at the start of the Five Year Plan it was almost impossible to purchase clothes, so I didn't get an overcoat until I got to Stockholm.

The object of my second visit to Irkutsk was to visit my Russian friends at the university and the biological station and to look over some of the Lake Baical collections. Again I was the guest of Dr. Jaznitsky, the specialist of Baical algae, and of Dr. M. Cajoff, specialist of mollusks. The man that I had wished to see especially was Dr. Shevyakoff, but he had died only a few days before.

The shores of Lake Baical are mostly rocky cliffs, and the descent into deep water is often abrupt. On some stretches of the coast, there are shallows which are quite rich in forms of invertebrate fauna. Many of these animals live under stones or adhering to the stones.

Both times when I visited the lake the deep-sea dredging boat was tied up for the winter. From the biological station, through Dr. Cajoff, I received the following species of shells which I have in my collection. All these shells are thin and fragile.

Pisidium (3 species), *Sphacrium* (1), *Choanomphalus* (8), *Benedictia* (3), *Valvata* (2), *Kobeltocochlea* (1), *Ancylus* (1), *Baicalia* (20). The various species were collected at from 2 to 40 meters depth, but one species of *Benedictia* at 150 meters.